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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/652,376 | 08/31/2000 | Arun Kumar Sinha | U 012930 | 4436 |

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EXAMINER

KEYS, ROSALYND ANN

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

1621

DATE MAILED: 06/10/2002

10

Please find below and/or attached an Office communication concerning this application or proceeding.

1/19/03
main rejection

Office Action Summary

Application No.

09/652,376

Applicant(s)

SINHA, ARUN KUMAR

Examiner

Rosalynd Keys

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

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DETAILED ACTION

Status of Claims

1. Claims 1-7 are pending.
Claims 1-7 are rejected.
Claims 8-12 are canceled.

Information Disclosure Statement

2. See previous office action, Paper No. 7.

Drawings

3. See previous office action, Paper No. 7.

Claim Objections

- ✓ 4. Claim 1 is objected to because PD is not the correct symbol for palladium. PD should be changed to Pd.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Devgan and Bokadia (Aust. J. Chem., 1968, 21, 3001-3003) in view of March (Advanced Organic Chemistry: Reactions, Mechanisms, and Structure, third edition, 1985, pp. 691-700 and 1093-1096).

The instant claims are directed to a process for preparing 1-Propyl-2,4,5-trimethoxybenzene comprising a) providing crude calamus oil or β -asarone in a solvent; b) hydrogenation of the solution in the presence of a catalyst at a pressure of 10-40 psi and a temperature in the range of 15-40°C; c) filtering the catalyst and removing the solvent under reduced pressure in the range of 10-100 mm Hg; and d) subjecting the reduced calamus oil to column of silica gel chromatography to obtain the desired product in liquid form with 85-97% purity. The calamus oil used is of the tetraploid or hexaploid origin. The toxicity of the hydrogenated calamus oil is two times less than the starting calamus oil. The reduced calamus oil has a novel honey and roses aroma. The 1-Propyl-2,4,5-trimethoxybenzene obtained has a novel sweet ylang, slightly spicy and fruity aroma. The calamus oil is extracted from asarone rich plants.

Devgan and Bokadia (Devgan et al.) teach a) providing γ -asarone in alcohol; b) hydrogenating the solution in the presence of palladium-charcoal; c) filtering the catalyst off and removing the alcohol under suction; and the residue was chromatographed over neutral alumina and eluted with petroleum. The product obtained was dihydro- γ -asarone. The instant claims differ from Devgan et al. in that the instant invention

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employs β -asarone as the starting material instead of γ -asarone, as taught by Devgan et al. However, March teaches that most carbon-carbon double bonds, whether substituted by electron-donating or electron-withdrawing substituents, can be catalytically hydrogenated, usually in quantitative or near-quantitative yields (see paragraph bridging pages 691-692). In both Devgan et al. and the instant invention the hydrogenation occurs over a double bond. March teaches that almost all known alkenes add hydrogen at temperatures between 0 and 275°C (see page 692). Both Devgan et al. and the instant applicants utilize a temperature within this range (see the second full paragraph of Devgan et al. on page 3003 under the heading Dihydro- γ -asarone (II)) and claim 1 of the instant invention). March teaches that many functional groups may be present in the molecule, e.g., OH, COOH, NH₂, CHO, COR, COOR, OR CN; and that although, some of these groups are also susceptible to catalytic hydrogenation, it is usually possible to find conditions under which double bonds can be reduced selectively (see page 692 and pages 1093-1096). β - and γ -asarone both contain the functional group COR. March teaches that hydrogenations in most cases are carried out at room temperature and just above atmospheric pressure, but some double bonds are more resistant and require higher temperatures and pressures (see page 693). Each of Devgan et al. and the applicants utilize temperatures and pressures within the ranges taught by March (see the second full paragraph on page 3003 of the Devgan et al. reference under the heading Dihydro- γ -asarone (II) and claim 1 of the instant invention). March teaches that catalytic hydrogenation is the method most often used and that palladium-on-carbon is one of the most effective catalysts

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utilized (see pages 692 and 693). Both Devgan et al. and the applicants utilize Pd/C as a catalyst for conducting their hydrogenation processes. One having ordinary skill in the art at the time the invention was made would have found it obvious to utilize a conventional hydrogenation process, as taught by March to obtain the di-hydro derivative of β -asarone. The skilled artisan would have been further motivated to utilize the conventional process of March to obtain the di-hydro derivative of β -asarone, since the conventional process had already been demonstrated to be effective on a geometric isomer of β -asarone, i.e., γ -asarone, as taught by Devgan et al. A long line of cases have held that the mere use of a different starting material, whether novel or known, in a conventional process to produce the product one would expect therefrom does not render the process unobvious. See for example In re Surrey et al. (CCPA 1963) 319 F2d 233, 138 USPQ 67; In re Larsen (CCPA 1961) 292 F2d 531, 130 USPQ 209; and In re Durden, Jr. et al. (CAFC 1985) 763 F2d 1406, 226 USPQ 359. Further, once the general reaction has been shown to be old, the burden is on the applicant to present reason or authority for believing that a group on the starting compound would take part in or affect the basic reaction and thus alter the nature of the product or the operability of the process. See In re Neugebauer et al. (CCPA 1964) 330 F2d 353, 141 USPQ and In re Boe et al. (CCPA 1974) 505 F2d 1297, 184 USPQ 38.

Devgan and Bokadia fail to disclose the toxicity and aroma of the obtained hydrogenated asarone. However, one having ordinary skill in the art would expect the hydrogenated asarone to have the claimed characteristics since, a compound and its properties are inseparable. In re Papesch, 315 F.2d 381, 137 USPQ 43 (CCPA 1963).

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Devgan and Bokadia fail to disclose the concentration of catalyst utilized.

However, changes in temperature, concentrations, or other process conditions of an old process does not impart patentability unless the recited ranges are critical, i.e., they produce a new and unexpected result . In re Aller et al., (CCPA 1955) 220 F2d 454, 105 USPQ 233.

Devgan and Bokadia fail to disclose the purity of the obtained dihydro asarone. However, when claiming a purer form of a known compound, it must be demonstrated that the purified material possess properties and utilities not possessed by the unpurified material. Ex parte Reed, 135 U.S.P.Q. 34, 36 (P.O.B.A. 1961), on reconsideration, Ex parte Reed, 135 U.S.P.Q. 105 (P.O.B.A. 1961).

Devgan and Bokadia utilize a different method of chromatography in step d). However, one having ordinary skill in the art would have found it obvious to utilize any known method of chromatography in order to identify the product obtained.

Response to Amendment

Claim Objections

7. The objection to claim 1 is withdrawn, due to the amendment to claim 1.

Claim Rejections - 35 USC § 112

8. The rejection of claim 7 under 35 U.S.C. 112, second paragraph, is withdrawn, due to the amendment to claim 7.

Response to Arguments

9. Applicant's arguments with respect to claims 1-7 have been considered but are moot in view of the new ground(s) of rejection.

However, with regard to applicants statement that the instant and prior art processes do not take place on ring atoms or atoms directly attached to ring atoms the examiner disagrees. In both the instant invention and Devgan et al. hydrogenation is taking place on an unsaturated carbon chain, which is directly attached to a trimethoxybenzene, which is a ring system. It appears that the applicants are implying that In re Durden is not relevant because the differences in the compounds are not the same. However, this argument is not persuasive because in order for a case law to be relevant, it is not required that compounds in the case law be similar to the compounds of the instant invention and/or prior art, but that the issue be similar. In the instant case the issue in Durden dealt with the fact that irregardless of whether or not the starting materials are patentable, the process that is occurring is a conventional process that produces the product one would expect therefrom, i.e., reacting an oxime group to form a carbamate ester. The same issue exists here, but in the instant case it is hydrogenation of a double bond to obtain the dihydro derivative. Thus, the instant invention is not considered to be patentable over Devgan et al. in view of March because the applicants utilize a conventional process, i.e., hydrogenation, as taught by both Devgan et al. and March, to obtain the product that one having ordinary skill in the art would have expected to obtain, i.e., the dihydro derivative, as taught by Devgan et al.

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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rosalynd Keys whose telephone number is 703-308-4633. The examiner can normally be reached on M-F 3:00 p.m.-8:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann Richter can be reached on 703-308-4532. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and 703-872-9307 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1235.



R. Keys
June 6, 2002



Rosalynd Keys
Primary Examiner
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